

IX Homework-7 MCQs - POLYNOMIALS

- 1) Let $f(x)$ be a polynomial such that $f(-\frac{1}{2})=0$, then a factor of $f(x)$ is
 (a) $2x-1$ (b) $2x+1$ (c) $x-1$ (d) $x+1$
- 2) If $x+2$ and $x-1$ are the factors of x^3+10x^2+mx+n , then the values of m and n are respectively
 (a) 5 and -3 (b) 17 and -8 (c) 7 and -18 (d) 23 and -19
- 3) The value of k for which $x-1$ is a factor of $4x^3+3x^2-4x+k$ is
 (a) 3 (b) 1 (c) -2 (d) -3.
- 4) If $x+a$ is a factor of $x^4-a^2x^2+3x-6a$, then $a =$
 (a) 0 (b) -1 (c) 1 (d) 2
- 5) If $x+1$ is a factor of the polynomial $2x^2+kx$, then $k =$
 (a) -2 (b) -3 (c) 4 (d) 2
- 6) If $x^{51}+51$ is divided by $x+1$, the remainder is
 (a) 0 (b) 1 (c) 49 (d) 50
- 7) If $x-3$ is a factor of $x^2-ax-15$, then $a =$
 (a) -2 (b) 5 (c) -5 (d) 3
- 8) If $x+2$ is a factor of $x^2+mx+14$, then $m =$
 (a) 7 (b) 2 (c) 9 (d) 14
- 9) If $x^{140}+2x^{151}+k$ is divisible by $x+1$, then value of k is
 (a) 1 (b) -3 (c) 2 (d) -2
- 10) If $x-a$ is a factor of $x^3-3x^2a+2a^2x+b$, then value of b is
 (a) 0 (b) 2 (c) 1 (d) 3
- 11) If x^3+6x^2+4x+k is exactly divisible by $x+2$, then $k =$
 (a) -6 (b) -7 (c) -8 (d) -10
- 12) If $x-2$ is a factor of $x^2+3ax-2a$, then $a =$
 (a) 2 (b) -2 (c) 1 (d) -1
- 13) If $x^2+kx+6 = (x+2)(x+3)$ for all x , then the value of $k =$
 (a) 1 (b) -1 (c) 5 (d) 3
- 14) $x+1$ is a factor of the polynomial
 (a) x^3+x^2-x+1 (b) x^3+x^2+x+1 (c) $x^4+x^3+x^2+1$ (d) $x^4+3x^3+3x^2+x+1$
- 15) If $f(x) = x^2-2\sqrt{2}x+1$, then $f(2\sqrt{2}) =$
 (a) 0 (b) 1 (c) $4\sqrt{2}$ (d) $8\sqrt{2}+1$
- 16) Zero of polynomial $f(x) = 3x+7$ is (a) $7/3$ (b) $-3/7$ (c) $-7/3$ (d) -7
- 17) If $f(x) = x+3$, then $f(x)+f(-x) =$ (a) 3 (b) $2x$ (c) 0 (d) 6
- 18) Zero of the zero polynomial is (a) 0 (b) 1 (c) any real no. (d) not defined
- 19) $\sqrt{2}$ is a polynomial of degree (a) 2 (b) 0 (c) 1 (d) $1/2$
- 20) degree of a zero polynomial is (a) 0 (b) 1 (c) any natural (d) not define number

IX Homework-7 (Answers)

1) $x + \frac{1}{2}$ or $2x + 1$ (b)

2) Let $p(x) = x^3 + 10x^2 + mx + n$

$$p(-2) = 0$$

$$\Rightarrow (-2)^3 + 10(-2)^2 + m(-2) + n = 0$$

$$\Rightarrow -8 + 40 - 2m + n = 0$$

$$\Rightarrow 32 - 2m + n = 0$$

$$n = 2m - 32 \rightarrow (1)$$

$$p(1) = 0$$

$$\Rightarrow 1 + 10 + m + n = 0$$

$$\Rightarrow 11 + m + 2m - 32 = 0 \quad [\text{from eq: (1)}]$$

$$3m - 21 = 0$$

$$3m = 21$$

$$m = 7$$

From eq: (1),

$$n = 2 \times 7 - 32 = 14 - 32$$

$$n = -18 \quad (c)$$

3) Let $p(x) = 4x^3 + 3x^2 - 4x + k$

$$p(1) = 0$$

$$\Rightarrow 4 + 3 - 4 + k = 0$$

$$k = -3 \quad (d)$$

4) Let $p(x) = x^4 - a^2x^2 + 3x - 6a$

$$p(-a) = 0$$

$$\Rightarrow (-a)^4 - a^2(-a)^2 + 3(-a) - 6a = 0$$

$$\Rightarrow a^4 - a^4 - 3a - 6a = 0$$

$$-9a = 0$$

$$a = 0 \quad (a)$$

5) Let $p(x) = 2x^2 + kx$

$$p(-1) = 0$$

$$\Rightarrow 2(-1)^2 + k(-1) = 0$$

$$\Rightarrow 2 - k = 0$$

$$k = 2 \quad (d)$$

6) Let $p(x) = x^{51} + 51$

Remainder = $p(-1) = (-1)^{51} + 51 = -1 + 51 = 50$ (d)

7) Let $p(x) = x^2 - ax - 15$

$p(3) = 0$

$\Rightarrow (3)^2 - a \times 3 - 15 = 0$

$\Rightarrow 9 - 3a - 15 = 0$

$\Rightarrow -3a - 6 = 0$

$-3a = 6$

$\boxed{a = -2}$ (a)

8) Let $p(x) = x^2 + mx + 14$

$p(-2) = 0$

$\Rightarrow (-2)^2 + m(-2) + 14 = 0$

$\Rightarrow 4 - 2m + 14 = 0$

$\Rightarrow -2m + 18 = 0$

$\Rightarrow -2m = -18$

$\boxed{m = 9}$ (c)

9) Let $p(x) = x^{140} + 2x^{151} + k$

$p(-1) = 0$

$\Rightarrow (-1)^{140} + 2(-1)^{151} + k = 0$

$\Rightarrow 1 - 2 + k = 0$

$\Rightarrow -1 + k = 0$

$\boxed{k = 1}$ (a)

10) Let $p(x) = x^3 - 3x^2a + 2a^2x + b$

$p(a) = 0$

$\Rightarrow a^3 - 3a^2 \times a + 2a^2 \times a + b = 0$

$\Rightarrow a^3 - 3a^3 + 2a^3 + b = 0$

$\Rightarrow -2a^3 + 2a^3 + b = 0$

$\boxed{b = 0}$ (a)

11) Let $p(x) = x^3 + 6x^2 + 4x + k$

$p(-2) = 0$

$\Rightarrow (-2)^3 + 6(-2)^2 + 4(-2) + k = 0$

$-8 + 24 - 8 + k = 0$

$8 + k = 0$

$\boxed{k = -8}$ (c)

$$12) \text{ Let } p(x) = x^2 + 3ax - 2a$$

$$p(2) = 0$$

$$\Rightarrow 4 + 6a - 2a = 0$$

$$4a = -4$$

$$\boxed{a = -1} \quad (d)$$

$$13) x^2 + \textcircled{k}x + 6 = (x+2)(x+3) \\ = x^2 + \textcircled{5}x + 6$$

$$\therefore \boxed{k = 5} \quad (c)$$

$$14) (a) x^3 + x^2 - x + 1 = (-1)^3 + (-1)^2 - (-1) + 1 = -1 + 1 + 1 + 1 = 2 \neq 0$$

$$(b) x^3 + x^2 + x + 1 = (-1)^3 + (-1)^2 + (-1) + 1 = \cancel{-1} + \cancel{1} - \cancel{1} + \cancel{1} = 0 \quad (b)$$

$$15) f(x) = x^2 - 2\sqrt{2}x + 1$$

$$f(2\sqrt{2}) = (2\sqrt{2})^2 - 2\sqrt{2} \times 2\sqrt{2} + 1$$

$$= \cancel{8} - \cancel{8} + 1 = 1 \quad (b)$$

$$16) \text{ put } f(x) = 3x + 7 = 0$$

$$\Rightarrow 3x = -7$$

$$\Rightarrow x = -\frac{7}{3} \quad (c)$$

$$17) f(x) = x + 3$$

$$f(-x) = -x + 3$$

$$\therefore f(x) + f(-x) = \cancel{x} + 3 - \cancel{x} + 3 = 6 \quad (d)$$

$$18) \text{ any real number } (c)$$

$$19) \sqrt{2} = \sqrt{2}x^0$$

$$\text{degree} = 0 \quad (b)$$

$$20) \text{ not defined } (d)$$
